

CACTUS AND SUCCULENT JOURNAL

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Of America

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No. 3

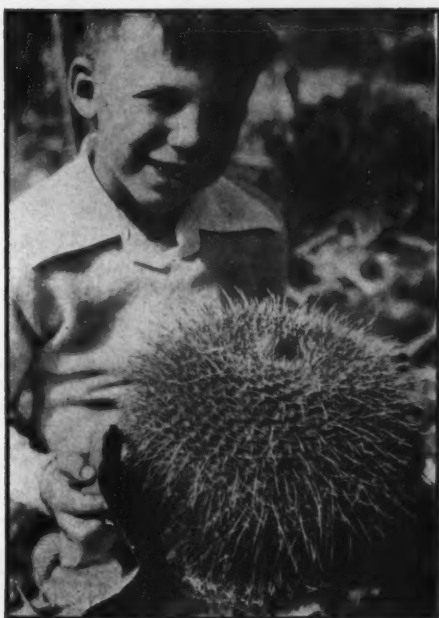


FIG. 21. *Mammillaria hamiltonboydii* almost as large as Stephen Haselton. This 11-inch plant was sent by Mrs. F. Schmoll, Mexico.



CACTUS AND SUCCULENT JOURNAL

Published and Owned by the Cactus and Succulent Society of America, Inc., Box 101, Pasadena 16, California. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$3.00 per year; foreign \$3.50 by international money order. Mail application to SCOTT HASELTON, Editor, Box 101, Pasadena 16, Calif. *Editorial Staff:* THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879. Published bi-monthly. We reserve the right to accept or reject advertising or articles sent to this JOURNAL.

Vol. XXII

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EDITOR'S NOTES

This JOURNAL is being published as a bi-monthly magazine again this year. We find that mailing 32 pages every other month instead of 16 pages every month satisfies most of our readers and it is the only solution to avoid raising the price of the JOURNAL. There will be six 32-page issues (minimum) during the year. The magazine is mailed about the 20th of every other month beginning with the January issue. You will find the pages numbered consecutively starting with page one in January and ending with page 192 for the sixth issue.

Most of the renewals fall due at the end of each year and members are so notified. Renewals were slow this year and thus the continuation of the printing of color plates has been delayed.

The bookbinder has promised to complete the binding of the JOURNALS this week and they will be mailed as rapidly as possible.

Membership cards have been mailed to all those who requested them on the questionnaire. Members who have not received a card may have one by writing to your editor. Starting in June, all new members will receive a membership card automatically.

If you are interested in a set of Britton and Rose "The Cactaceae" make an offer to R. E. Willis, 2721 Bellevue Ave., Los Angeles, Calif. Volumes II, III, and IV are the original printing with color plates and Vol. I is the Deluxe reprint.

ANNOUNCING

Our Fourth Biennial Convention

Three days of a jolly good get-together in Denver, July tenth to twelfth, next year. More fun than a country fair. More educational than a summer college course. Enjoy a tip-top vacation at our Convention in the Roof Garden of America.

Well friends that's it! First call to begin making your plans and saving your quarters. Every quarter saved is a gallon of gas for the car.

That live wire committee of Denver girls* has been scouring the city and its environs for the best place

*Muriel Colburn is Convention Secretary and Elizabeth Eckstein, commonly called Opuntia Liz is Local Chairman.

for us to stay and hold our meetings. The whole Denver Society has been discussing things for us to do. They'll probably run the legs off of us or more likely, the tires off our cars in showing us the sights. I'm going to Denver this July and help them pick the best. There are so many things to see, we can't see them all.

A rough draft of the program has already been prepared. It will be torn apart and put together again several times in order to make it the best yet. Lad Cutak says he really has some ideas for that initiation into the Ancient Order of Cactus Nuts. If not already a member of the Cactus Nuts, you have to attend a convention to become one. All duly initiated members will have to attend this one to keep in good standing. Then, of course, we will have the best speakers and pictures in the country.

When the gavel comes down to close the last meeting, the fun will not be over, for there will be field trips to hunt cactus in their native homes and to let the rock hounds hunt pretty pebbles. Colorado is a vacation land too. It has mountains, forests, rivers, lakes and hot springs. There's hunting and fishing, hiking and swimming, sight seeing, golf and even skiing in the summer time. Don't forget the camera for there will always be "a picture ahead."

HOWARD E. GATES, *Chairman.*

EPIPHYLLUM HANDBOOK by Scott E. Haselton

The purpose of this book is to help one to know and enjoy his plants to the fullest extent. For the scientific minded there are descriptions of the genera in the Epiphyllanace and the keys of Schumann, Berger, and Britton and Rose. For the beginner, the pictures alone will tell the complete story of these fascinating plants—how to make them grow and flower. *Contains:* 250 pages 5½x8 in., 170 photographs and 11 color plates. Printed on the best pre-war paper, bound in Buckram \$3.85; postage 15c, foreign 25c.

PHYLLOCACTUS by Curt Knebel

Mr. Knebel is our oldest propagator of Epiphyllums and it is his hybrids that first attracted growers in this country. This life history includes: Laws of Nature in Propagation; My Methods as a Propagator; List of My Originations; Cultivation and Propagation of Phyllocacti, etc. 64 pages, paper cover. Postage \$1.65.

Box 101 — Pasadena 16 — California



FIG. 22. Vegetative stems (left), x 0.5. Flowering stem (right) shows flattened apex, x 0.3. *Myrtillocactus* stem on extreme right.

IS THE GENUS MORAWETZIA BACKBG. VALID?

By JOHN POINDEXTER

In 1936 Backeberg established the genus *Morawetzia* to include *M. doelzianus* which he discovered in Central Peru. He based the genus on the fact that this plant has a terminal cephalium, or according to the American usage a terminal pseudocephalium. Since that time both Dr. J. Borg and Mr. W. T. Marshall have included this species in the genus *Oreocereus*. In his generic diagnosis Dr. Borg says of *Oreocereus*, "... the flowering areoles being like the others, without a pseudocephalium."¹ In "Cactaceae" Marshall says:

"This species was assigned to the genus *Morawetzia* by Backeberg because of the apical position of the flower, which, however, is only slightly more marked in this species. He also speaks of a cephalium from which the flower arises, but, again this massing of silky hairs is only slightly more than is usual in other species of this genus."²

Backeberg has figured this plant in several of his publications, but the figure does not show too clearly whether there is any actual difference between the flowering region and ordinary vegetative stem apices. Consequently there is still some room for argument as to whether there

is a specialized flowering structure or not. It is hoped that the observations to follow will clarify the situation. Inasmuch as there are a number of excellent descriptions of this species, the writer will omit the description to the floriferous area.

Morawetzia doelzianus branches freely from the base, the stems growing laterally until they are able to turn upward. A plant of flowering size will usually have at least four or five stems and can have many more. On a vigorously growing plant it can be seen at once that there is a difference between the mature branches which bear flowers and the other branches which are still in the process of growth. The apex of the immature stems is conical, tapering to a rounded point, while the apex of a flowering stem is somewhat swollen and flattened. This is shown fairly well in Figure 22, although the photographer is handicapped by the quantity of hair and the long spines which develop in this region. The flowers are limited to the swollen and flattened region at the tip of the floriferous

¹ *Cacti*, J. Borg, Macmillan, 1937.

² *Cactaceae*, Marshall and Bock, Abbey Garden Press, 1941.

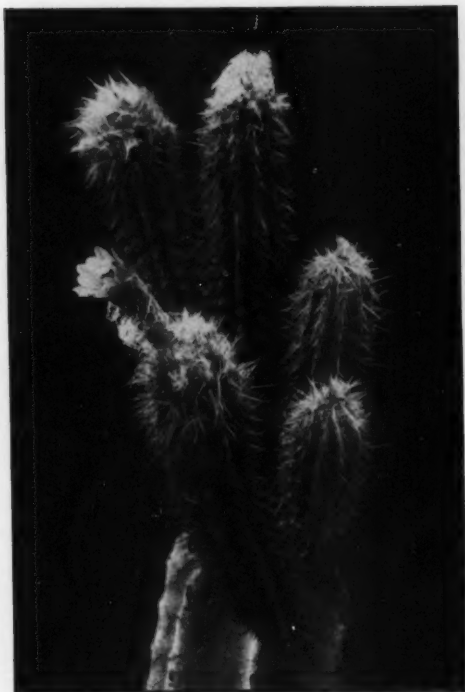


FIG. 23. Flowering plant grafted on *Cereus* stock. Three flowering stems to the left and two vegetative stems to the right, x 0.25



FIG. 25. Three flowering stems, x 0.25



FIG. 24. Flowering stem with fruit, x 0.3

branch as shown in Figures 23 and 24.

Due to the easily modified appearance of the spines and hair it is not so easy to show that they grow differently on the floriferous and vegetative apices. Figure 23 shows how the hair can be weathered off to approximately the same appearance on both types of stems. However, it is again possible to see a distinct difference in the cultivated plant grown under the optimum conditions. Figure 25 shows three floriferous stems with very definite tufts of long hair at the apices. This is in marked contrast to the situation on the four vegetative apices in Figure 22. However, these tufts of hair are easily eroded away by wind and water, and it is possible to see them only when the plants are growing rapidly and under stable weather conditions.

On the basis of these observations and photographs, the writer feels that there is considerable justification for the separation of *Morawetzia* from *Oreocereus*. The latter genus includes plants "without a cephalium," according to Britton and Rose, while the species in question appears to have a terminal pseudocephalium as distinct as that found in *Arrojadoa*. At the same time the relationship between the two forms is very close, as shown by the similar flowers and fruits.

The writer is indebted to Mr. and Mrs. Leo Beall, of Oceanside, California, for permission to photograph the magnificent specimen of *M. doelziannus* in their garden.



FIG. 26. *Aloe speciosa* Bak. with *Euphorbia coerulescens* in foreground.
G. W. Reynolds photo.

COLLECTING SUCCULENTS IN SOUTH AFRICA

By F. R. LONG

PART IV. Witte Klip, Humansdorp, Hankey, and the Gamtoos River.

The area through which I now propose to take you for the fourth trip of my series is surely one of the most interesting in a botanical sense that anyone could wish for. It is so varied, and whether it be for succulents or systematic botanical collecting, a journey every month of the year could be profitably spent. Starting from Port Elizabeth and proceeding over the stony hills where we found the four species of *Euphorbia* (see my article No. 1), we stopped at a krantz still within the built-up area of the city to find *Haworthia cymbiformis* Haw. We were lucky to find some huge masses of this, some patches 2 feet in diameter, composed of individual plants all squeezed into one another,

with stolons pushing out on all sides. The aspect was invariably the south, or shady side of the rocky slopes and often under bushes. The plants are of a beautiful shade of pale, translucent green. This species responds to leafmold, sharp sand, and moisture but good drainage. It is very shallow rooting, and is often seen perched upon a rocky ledge with little soil, but where the water drains down the face of the cliff.

We were now on the Cape Road running due west, parallel to the coast line 4 to 5 miles to our left, with Witte Klip (White Stone) mountain straight ahead. Here we meet the eastern extremity of the flora of the Western Cape and



FIG. 27. *Aloe microcantba* Haw. G. W. Reynolds photo.

the intrusion of the flora of the Karroo which extends down to Uitenhage. Succulents, Ericas, Proteas, Crinums, ground and tree Orchids, and bulbs, forests and grasslands, all in a wild profusion. We intend to go through Van Staadens Pass over the Gamtoos River, as far

as the town of Humansdorp, turn north to Hankey, the Klein River, Patentie and then retrace eastward to Loerie and rejoin the Cape Road again. On this trip we shall be in typical Cape (western) Flora one minute and karoid scrub the next, with patches of indigenous forest here and there.

At the 10th mile we turned into Parsons vlei (swamp) to find *Aloe microcantba* Haw., a deciduous or almost so, species, stemless with deep salmon red flowers, growing among grass and the following, *Buphane disticha* Herb., *Brunsvigia Josephinae* Ker., and *Haemanthus coccineus* Linn., 3 glorious bulbous plants, also a *Lobelia* and several *Ericas*. Close by, also on the flat open ground was a pretty ground orchid *Eulophia Dregeana* Lindl. On an outcrop of rocks, *Cyrtanthus obliquus* Ait. bulbs were extracted with difficulty from between the slabs of rock. This lovely Amaryllid with its scarlet, orange and green pendulous flowers is a favorite of mine. It has recently been adopted as the crest of the Institute of Park Administration (S. A.).

Crassula perforata Thunb., *C. falcata* Wendl., and *Euphorbia elliptica* Thunb. were also nearby. A new Crinum, not yet named, was located at the 15th mile.

The *Haworthia fasciata* country was now commencing with almost every section of the undulating area having its separate form. I am listing them here as enumerated and described by Dr. von Poellnitz in geographical sequence as far as possible, to tie up with this journey. They are:

PLACE	NAME	PHOTOGRAPH
Port Elizabeth*	<i>H. fasciata</i> true	3rd from R.
Witte Klip	forma <i>sparsa</i>	7th from R.
Elands River**	forma <i>variabilis</i>	6th from R.
Van Staadens Pass	var. <i>vanstaadensis</i>	
Mouth of Gamtoos River	var. <i>subconfluens</i>	
	forma <i>ovato-lanceolata</i>	5th from R.
Uitenhage, 12 miles north***	<i>H. Browniana</i> Poelln.	4th from R.
	<i>H. Armstrongii</i> Poelln.	2nd from R.

Passing through the lovely pass of Van Staadens, we saw the Cape Chestnut Tree, *Calodendron capense* Thunb. in full flower but missed the waterworks area high upstream. Here is the home of the rare *Aloe laxiflora* N. E. Br. Whether this is *A. gracilis* Haw., G. W. Reynolds will soon decide as I hear he is in-

vestigating with his usual enthusiasm. This species has a very restricted habitat and so far only has been found on the hillsides above the Van Staadens gorge. The growth is slender but upright to 3 or 4 feet, with narrow, green leaves, and an inflorescence of a few lax flowers on a simple stem 12 inches long. The flowers are pendulous, scarlet with a touch of yellow, and are at their best in May when cut flowers are scarce. It is not unlike a beautiful *Lachenalia* and when associated with Maidenhair

*See Journal article No. 1 (Vol. XIX, pg. 135).

**Elands River is between the next range of hills and Witte Klip.

***See Journal article No. 2 (Vol. XX, pg. 87).

Fern, makes a delightful table decoration. Plentifully scattered on the same slopes is *Encephalartos longifolius* Lehm. Other Aloes here are: *A. arborescens*, *A. ferox** Mill., *A. pluridens* Haw., *A. africana* Mill.

To continue our journey through Thornhill we came to the Gamtoos River at the bridge about 3 miles from the east coast. Here we were in succulent country again with tall *Euphorbia triangularis*, *E. alciornis* "Spekboom" and the like. Just at the bridge, under the shade of bushes on a steep slope facing west, we found *Haworthia gracilis* Poelln, a species originally found by F. J. Stayner of Gasteria fame. Further on near the Kabeljauw river a form of *Haworthia planifolia* was collected. Between these two rivers and on the rise from the Gamtoos we set about to search for the rare *Gasteria Armstrongii* Poelln. and a little further on a natural hybrid, *G. Armstrongii* X *G. Beckeri*. The former is a peculiar plant not unlike a large sized Lithops in that it only has two leaves which are retuse with the tops level with the ground. The unbranched inflorescence is 18 inches in height bearing flowers of a lovely shade of red. Unless one knows the exact spot, it is almost impossible to find this species when

not in flower, hidden away on the flat ground among grasses and small shrubs.

Having spent a very full and tiring day we had the choice of spending the night at one of several hotels at Jeffreys Bay—a popular seaside and fishing resort—and hunting for *Gasteria Beckeri* on the way, or going on and putting up at the hotel in the small town of Humansdorp. We chose the latter. The following morning we set out early, taking the road that runs north striking the Gamtoos river several miles upstream, but just as we drew out of the town we popped into a small public park full of succulents, a very creditable collection. If only all towns would make a collection of the interesting plants that grow in the respective area, how interesting it would prove to the average tourist.

On the first stretch of the road two Stapelias were collected, *S. grandiflora* Mass. and *S. variegata* L., and a *Haworthia* seemingly near *H. fasciata* forma *ovato-lanceolata* Poelln. The *Euphorbias* here, were *E. polygona* Haw., and *E. Ledienii* Berger, with *E. inermis* Mill. on the flat grassy fields having a pinkish flower instead of the usual white form. Further on, going down into Hankey, *E. pubigland* N. E. Br. was in evidence. In this bush two *Ceropegias* are

*See "Succulents for the Amateur," pg. 152.



FIG. 28. A group of Haworthias and their forms (see text). Photo by F. R. Long.

growing, namely, *C. stapeliaeformis* Harv. and *C. carnosa* E. Meyer and also the more concealed *C. crassifolia* Schl. Ceropegias have their roots in well mulched soil under leafmold in the shade of small bushes in much the same way as gardeners grow Liliiums under Rhododendrons.

Passing through Hankey and turning up the Klein River, we found first, *Haworthia altissima* var. *inermis* Poelln. on a grassy, open slope, facing south, and further on in dense bush on more level ground, *Haworthia radula* (Jacq.) Haw. in dense patches. This latter is an easy plant to grow and freely sends out off-sets. In the same bushes in half shade were frequent clumps of the "Needle Leaf" *Gasteria*, *G. acinacifolia* (Jacq.) Haw. and what surprised me, a solitary area with *Aloe humilis* (L.) Haw. having orange colored flowers, a clean departure from the usual carmine-red usually found. The color is retained in cultivation.

Another very unusual and attractive plant found in the hills nearby in stony, sandy, well-drained soil is *Freesia Armstrongii* with a wiry

stem and purple-pink flowers. This was discovered by the late Wm. Armstrong in 1910 or thereabouts, and bulbs were sent to a well known firm in Holland. *F. Armstrongii* was there crossed with *F. refracta* resulting in the many beautiful hybrids seen in gardens today.

We retraced our steps to Hankey and ran up the valley to a spot beyond Patentie to locate *Haworthia Longiana* Poelln. We found it on a steep slope growing in clumps. This is an unusual species with elongated pointed leaves. It was discovered by Archibald Wahner of Port Elizabeth, a keen collector of the genus.

We passed through Loerie and at the level crossing found another species of Aloe, *A. saponaria** (Ait.) Haw. This is an outstanding, stemless, mottled-leaved plant with salmon pink flowers in attractive umbel form. We were soon on the main, tarred road again, having completed a triangle of country crammed full of interesting plants, only a few of which have been mentioned here.

*See "Succulents for the Aateur," pg. 150.

NEW SPECIES AND TYPE SPECIMENS

By IRA L. WIGGINS

Many amateur botanists, cactus fanciers, and horticulturists apparently feel that the "International Rules of Botanical Nomenclature" were devised by a group of Machiavelian "professionals" who were concerned more with making the lot of the nonprofessional difficult than with forwarding our knowledge of the living plants. The necessity of shifting a name from one plant to another as new evidence comes to light; the loss of long-used names when this happens; the requirement that a Latin diagnosis accompany the description of every putative new species; and the requirement that a TYPE SPECIMEN be preserved as a permanent documentation of the name proposed; seem to have irked too many writers. Through the years, fortunately, most of the people who are interested in furthering the accumulation of accurate information about succulents have seen the wisdom of following rules painstakingly worked out at International Botanical Congresses and have kept in step with developments as new information made even more carefully formulated codes possible. The application of the International Rules of Botanical Nomenclature has, in general, caused only temporary inconvenience to the succulent fanciers and has brought about a much more stable and reliable system of nomenclature

than could have been possible without such rules and regulations.

But the difficulties encountered in trying to make reasonably good permanent specimens of a cactus plant, or the reluctance to sacrifice a prized living specimen when a new species is described, seem to have been hurdles too great for well-meaning enthusiasts who have studied the entities involved and have decided they should be described as new. (My concern at this moment is not with the reliability of the decisions so reached nor with the way in which time and newer techniques may deal with the "new" entities—that question is often an open one and frequently difficult to resolve.) So, having despaired of making a good specimen, or having decided he could not part with a precious specimen growing in his collection, the enthusiastic grower or collector writes up a description, translates the gist of the description into Latin (or has a friend do the translation for him), and sends his paper to an editor for publication.

The new species may be a thoroughly valid one. It may stand all of the corrosive effects of probing by other succulent fanciers and by the most skeptical professional botanists. BUT, how is the professional or nonprofessional liv-

ing elsewhere to know positively that he is dealing with the same entity described by the author who first published the description if no specimen was preserved when the original description was drawn up? That is the question which vexed taxonomists for decades and which finally brought into being that portion of the International Rules of Botanical Nomenclature dealing with this question. This matter is dealt with in Section 2, Article 18, and in Recommendations IV through VII of the Rules. I quote as follows from Article 18, "The application of names of taxonomic groups is determined by means of *nomenclatural types*. A nomenclatural type is that constituent element of a group to which the name of the group is permanently attached, whether as an accepted name or as a synonym. . . ." "The type of the name of an order or suborder is a family, that of the name of a family, subfamily, tribe or subtribe is a genus, that of a generic name is a species, that of the name of a species or group of lower rank is usually a specimen or preparation. . . ." Following the above statements in Article 18 are recommendations which are generally accepted by taxonomists, for they help to stabilize the nomenclature of plants. The parts pertinent to this discussion read as follows: "Recommendations: IV. When publishing names of new groups, authors should indicate carefully the subdivision which is the type of the new name: the type-genus in a family, the type-species in a genus, the type-variety or specimen in a species. *This type determines the application of the name in the event of the group being subsequently divided.* . . ." "VII. *The utmost importance should be given to the preservation of the original ('type') material on which the description of a new group is based.* In microscopic Cryptogams the preparations and the original drawings, in fleshy Fungi water-colour drawings and specimens suitably prepared or dried, should be preserved. *The original account should state where this material is to be found.*" (Italics in above quotations mine.)

Several times in the past few years descriptions of new species of plants have been published in the Cactus and Succulent Journal without any mention whatsoever of the preservation of a type or any mention of where such a type, if it exists, can be found. Such omissions can, of course, occur because the writer is unaware of the rules governing the application of names to previously undescribed plants. Another question arises, however, as to whether or not there might have been an element of indolence involved. Anyone who has ever attempted to make a "permanent preparation" of a cactus knows the work, often painful, involved. But if one

wants his work applauded, or even accepted, by others working with plants, he is obligated to himself and to them to prepare this "permanent, type specimen." Merely citing the general, or even an accurately located, geographical region is not enough. There are too many records of the complete extinction of a species at its "type locality" to permit such a procedure. When that happens, what good is the citation of a "type locality?" On the other hand, a specimen, either thoroughly dried or preserved in alcohol, formaldehyde solution, or some other reliable preservative, can be referred to by any doubting Thomas who wants to KNOW what the original author had before him when he wrote the description of his new species.

Please note that one permanently preserved specimen constitutes the legal "type." But if it is possible to secure several specimens—all from the same plant if that is possible—but carefully selected if the plants are small and preserved in their entirety, one may be doubly sure of a guarantee against later uncertainty. When several such specimens are prepared ONE of them is designated as the type and the location of the type is clearly indicated. The ADDITIONAL specimens should be distributed to several other institutions where they will be well cared for and where they will be classified as "isotypes" or "duplicates from the type collection." This method reduces the danger of doubt arising if the unique "type" is destroyed by fire or other accident. It makes it possible for students of the group in several centers to KNOW what the characteristics of the newly described species are.

Herbaria connected with institutions where botanical research is done offer the safest depositories for "types," for these valuable documentary specimens are given special care and housing—usually in steel, fireproof cases. If an author is not personally acquainted with a botanist at such an institution he can learn of the nearest well managed herbarium by writing to E. P. Killip, Curator of the U. S. National Herbarium, Smithsonian Institution, Washington 25, D.C., or to the head of the botany department at any of the larger colleges and universities in the United States. Any of them will be able to furnish particulars about the facilities for storing "types" at his own institution or the name of a curator at an herbarium where such materials are given careful housing and care. The Editor of the Cactus and Succulent Journal, Mr. Haselton, can furnish such information about a number of institutions.

A few pointers on methods of preparing type specimens of cacti may not be amiss. Small plants, such as specimens of *Mammillaria*, *Coryphantha* and *Escobaria*, can be preserved whole

by placing them in a jar of 50% alcohol or in a 10-12% solution of formaldehyde. One or more flowers should be removed from the plant, split down one side, and carefully spread out between two pieces of newspaper, these put between blotters and a weight placed on top of the whole "sandwich." The blotters should be removed and dried in the sun or over a stove at the end of a few hours and returned to the press. This changing and periodic drying of the blotters should be repeated at 12-24 hour intervals until the pressed flowers are completely dry. It may take a week or more to dry them out to the point where they no longer feel cool to the back of one's hand. If the blotters are not changed frequently, particularly during the earlier stages of the drying, the specimen is almost sure to be spoiled by mold or by the loss of color. After the flowers are dry they may be placed in an envelope and accompany the preserved plants, bearing the same data and collection numbers as the preserved vegetative specimens.

Another method that may be used with small globose and elliptical cacti is to dry the whole plant. This is most easily done by cutting off the bottom part of the plant much as one would make a "plug" in testing a watermelon, scooping out the pulpy material so as to leave the outer rind and the attached spines intact. If a plant so prepared is placed in a dry place where the air is warm, but not hot, the specimen will usually dry out with comparatively little shrinking or other distortion. At the end of the process the relative shape of the plant is preserved and the position of spine-clusters unaltered. In this type of preservation, also, the flowers and fruit should be removed and pressed between papers and blotters as outlined above.

Larger specimens, such as *Opuntia*, *Ratibunia*, *Lemaireocereus*, *Lophocereus*, *Pachycereus*, *Fero-cactus*, and the other large columnar and ovoid plants, can be preserved by judicious use of a knife so as to reduce the bulk without spoiling the form of certain diagnostic portions of the plants. One can cut "pancakes" at right angles to the long axis of the stems of such plants, making the cross sections about one-half an inch thick or less, and dry them between papers and blotters. (Caution: one *MUST* change the blotters, and often the papers as well, on these specimens very often if he is to obtain specimens unmarred by mold.) Added valuable material can be prepared by cutting a slab about one-half inch thick over the top of a branch of such a plant and thereby preserve the outline of the tip of the branch. Such a slab will show the distance between individual spine-clusters on the same rib. These slabs need not be over eight or ten inches long unless the plant has different

types of spines at, and some distance from, the tip—as in *Lophocereus Schottii*. In that case, cut two slabs, one near the tip of the branch and another lower down so as to include the spine-type of each region. Obviously, one may have to use three or four herbarium sheets ($11\frac{1}{2} \times 16\frac{1}{4}$ inches) to mount representative material from such a large cactus. But in no other way can one preserve adequately material to authenticate the plants as they grow in their native habitats.

When using this method, one should, of course, dry flowers and fruit (if both are available) to supplement the dried sections of the vegetative parts of the plants. A liberal sprinkling of naphthalene flakes or of crystals of paradichlorobenzene between the sheets of dried material will do much to retard the inroads of insects and the damage caused by mold.

Good photographs of the whole plant, close-ups of the spines, flowers and fruits, to accompany the specimens are of great value in supplementing the fragments of the plants one must be content with if preserving the large cacti.

Full collecting data, showing the locality at which the plant was taken, including the county and accurate local designations when that is possible, the altitude at which collected, the type of soil or, if in rock, a statement to that effect, the height of the whole plant, the color of the flowers, fruit and surface of the branches or body, the date on which it was collected, the name of the collector and the collecting number—if the collector used field numbers—should be typed or clearly written on a label to accompany each of the specimens being preserved and distributed.

If an author complies with such regulations, recommendations and suggestions as have been enumerated in this article, there will be much less criticism of his work and a greater possibility that his new species will be carefully, fairly and accurately evaluated by fellow workers—whether they be professional or amateur.

EDITOR'S NOTE: Dr. Lyman Benson of Pomona College also has prepared a paper "Permanent Plant Records" which will appear in the next JOURNAL. These two papers have been written, first, to show that herbarium specimens are absolutely essential and, second, to show how to properly prepare and record type material. From this date the Cactus and Succulent Journal of America can no longer accept new species for publication unless type material has been deposited in a recognized herbarium. S. E. H.

CULTURE IN OREGON

I'm not sure that anything I may write here will be of use to anyone but I feel that we should try to help each other—and my idea is that we are all a part of the JOURNAL and should be proud to add anything we can that will interest others in our hobby.

I've had some plants for four years but I lost more than I saved in the first several months—I loved them too well and spoiled 'em by over-watering and over-feeding. I find that different climates call for quite varied cultural practices so perhaps my notes might help some other north-west fan.

How I would begin a collection

First, I would find a good book and study various cultural methods looking for the methods that seem best fitted to my climate; house, window or glasshouse conditions should be considered. Next, I would order catalogs from reliable dealers, such as Johnson's, and order some of the following plants:

Gymnocalycium (Chin Cactus) as they bloom almost all summer; they are small plants suitable for window gardens. Then the Haworthias or Zebra Plants, as some call them, because they are easy to grow in small pots, multiply rapidly, and come in a variety of forms and markings; one can make an interesting collection of these alone. Bryophyllums seem to live on air alone, will withstand low temperatures (not frost); the babies at the tips of the leaves fall and soon you have families of little plants marching all over your benches—that's why they are called Maturity Plants. The colorful *Faucarias* (Tiger Jaws) will surprise you with golden flowers that open with the sunshine and close at night; there are several of these dotted-leaved plants with teeth-like margins.

The Epiphyllum group is unjustly called temperamental as I find the hybrids easy to grow and their large spectacular flowers are in a variety of colors. (The plants are large unless you select the Empress types which make fine hanging baskets). In this cooler climate most of the flowers come in June after setting buds in February and March.

Most folks know and love the old Christmas Cactus but few can make it flower; the plants need a good rest after flowering—just put them in a safe, cool place and forget them for at least a month, then water lightly for a few days; begin watering and feeding heavily all summer and let them have a short rest again in September. If you have had them outside, bring them in and start watering again. My large plant had more than 200 flowers and a small new plant had 78 flowers.

The *Echeverias* are another easy and interesting group, especially *E. gilva* and *E. pulvinata*. The latter is called Chenille Plant for its delightful coloring. *E. derenbergii* is a favorite and makes a breathtaking planting in a brass container. The Rebutias are especially free flowering; the tiny plants and their dazzling flowers are ideal for the apartment dweller.

One could not have a collection without a few Mammillarias—such a variety that flowers may be had at most any season. I would like some of the winter-flowering sorts but fear that we do not have enough sun here in Oregon for winter flowers.

Culture

Now as to potting soil for the desert kinds. I use a standard mix—at least it is recommended by several specialists and growers:

- 1 part good garden soil
- 1 part leaf mold—old and decayed
- 1 part clean, coarse sand—not beach sand

I usually add to this a handful of fertilizer, also about a pint of charcoal which can be obtained from a

poultry supply house. Always fill one third of the pot with coarse gravel for perfect drainage. I dip all cuttings and roots in "Rootone" or similar product and pot dry—leaving dry for at least three days. Before potting cuttings, dip them in sulphur and allow them to callous or heal well. Do not try rooting in water as this grows weak, watery roots and you may lose the cutting soon after planting. If the potting soil is too rich some of the *Echeverias* will never show the gorgeous colors.

Most plants need a resting period and will not flower unless this is allowed. Since we cannot keep track of all the different resting periods of the plants from the varied localities, we must choose the best time by experimentation. Winter seems best because of the dampness and cold and if we should over-feed and water, we would lose our plants.

The Epiphyllums need a completely different soil:

- 4 parts leaf mold
- 3 parts cow or sheep manure
- 2 parts gravel
- 2 parts sharp sand—not fine

Some advocate using some peat moss but I do not because it tends to hold too much moisture which causes instant rot. My Epiphyllums receive about ½ cup of water each month from November to January and perhaps that would not do for some of you.

Your plants will need a prodigious amount of fresh air and all the sun that the north-west provides. They will stand low temperatures; mine was down to 33 degrees and I firmly believe that plants must have a certain amount of cold to be at their best during flowering season. But friends, if you are determined as I was to flower and grow them properly, you must experiment and expect to lose a plant or so. Spray once every three months with Volck Oil Spray and more often if needed with Black Leaf-40 for the various pests. I feed monthly with Plant Chem Salts and weekly with Vitamin B-1. Once every other month I use 2 tablespoons of Household Ammonia to 1 gal. of water; this helps to give all growing plants better color. This all in the growing season of course.

At this date (Feb. 2, 1950) I have 13 Epiphyllums of many sorts that were single leaf cuttings in 1948 and are now a profusion of buds. They seem to like my methods. My glasshouse is 15 x 18 feet and heated with oil. Two benches down each side and plants everywhere. I hope that I have not been too vague but I repeat again that much must be learned by trial and error. For instance, no two people may have the same understanding of the word "moist" or "porous soil." Beginners must know that there are no hard and fast rules—they must get in and dig.

MRS. GRACE GILLILAND
Hood River, Oregon.

Mr. Scott Haselton, Editor

I am writing to say that I certainly am in favor of the news given in Mr. A. C. Stadelman's letter in your January, 1950, JOURNAL.

The JOURNAL is fine and I enjoy it, but I think that what we do need also is more information for "Amateurs" like myself, who have recently taken up the hobby of Window Gardens, and is anxious to get some plants to bloom, and thrive, etc. All catalogues, naturally, say that their plants are easy to bloom, and no doubt are when given the correct cultivating, but the next thing to know is just what to do and when to do it—and articles on this would surely help in the entire field I do feel.

Wishing your magazine the very best success ever.

MRS. WALTER REZEK, Algoa, Texas.

QUESTIONNAIRE

Last December we sent a questionnaire to 775 Society Members with the following results. It shows the comparatively small number who want membership cards or who want their names listed in a roster. Although the statements regarding monographs was somewhat vague and the prices high, only 4% expressed any interest in these scientific works. It was interesting to note the response to the color work, which would have been continued in the Journal except that it takes about half the year to regain the expirations that fall due at the end of the year.

Questionnaires mailed.....775
Questionnaires returned to me.....444

Those who want to be listed in Roster.....149
Those who do not want to be listed.....295
Those who want membership cards.....182
Those who expressed interest in books:
Color prints on subscription.....75
Succulent monograph.....36
Aloe monograph.....22
Echeveria monograph.....29
Haworthia monograph (write-in request)... 6
Society members who got a new subscription
during 1949..... 29

SCOTT HASELTON.

NOTES ON HAWORTHIAS

By J. R. BROWN

Haworthia Blackbeardiana var. *major* Poelln.
in Repert. Sp. Nov. XLI (1937) 196, XLIV
(1938) 236, in Cact. Journ. VI (1937) 37.
Plant simple, stemless, many leaved, 9-11 cm.
diam.

Leaves 5-7 cm. long, 12-20 mm. broad, to 10 mm. thick in upper part, oblong-lanceolate or broadly lanceolate, acuminate, smooth, pale glaucous green, abruptly pellucid in upper third, pellucid area shining and with 3-4 longer and 4-5 shorter green lines which scarcely reach the apex; face of leaf flat, lightly convex in upper part; back rounded and somewhat obliquely keeled in upper part; upper margins and keels with 2-5 mm. long, white, ciliate teeth; end-bristle minutely ciliate, 8-12 mm. long; back of leaf with more numerous green lines, 1 or 2 of which reach the apex.

Peduncle stout, simple, about 4 mm. diam., 30 cm. or more in height, including raceme, pale brownish-green; sterile bracts about 10, ovate-deltoid with a bristle-like tip, lower 8 mm. long, shorter upwards to 4 mm.; pedicels very short, bracts about 3 mm. long, ovate-deltoid, acute with a brownish keel; perianth 12-14 mm. long, tube obclavate, somewhat triangularly rounded, greenish-white with deep green lines; segments short, obtuse, white tinged rose, with darker greenish-brown keels; face of flower about 5 mm. in diameter.

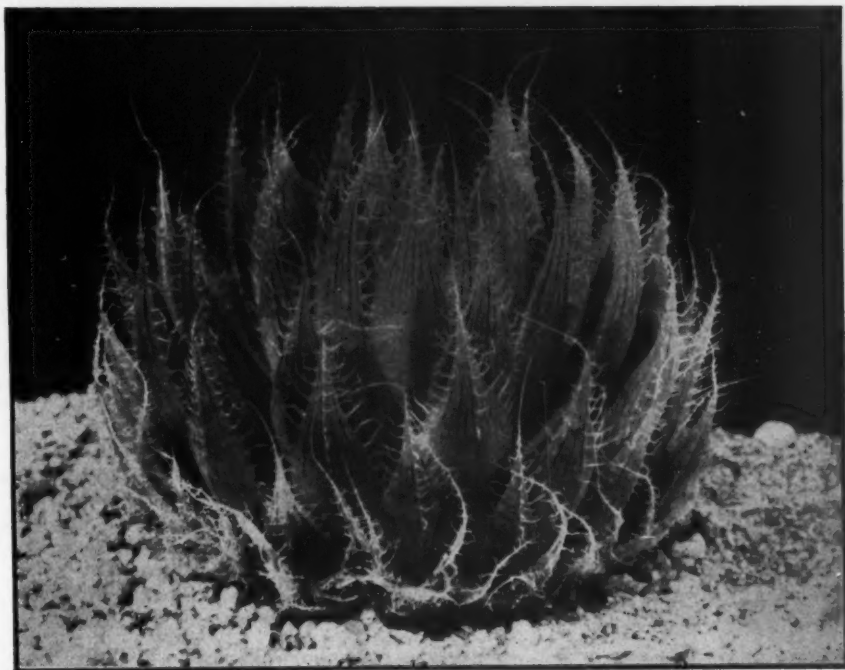
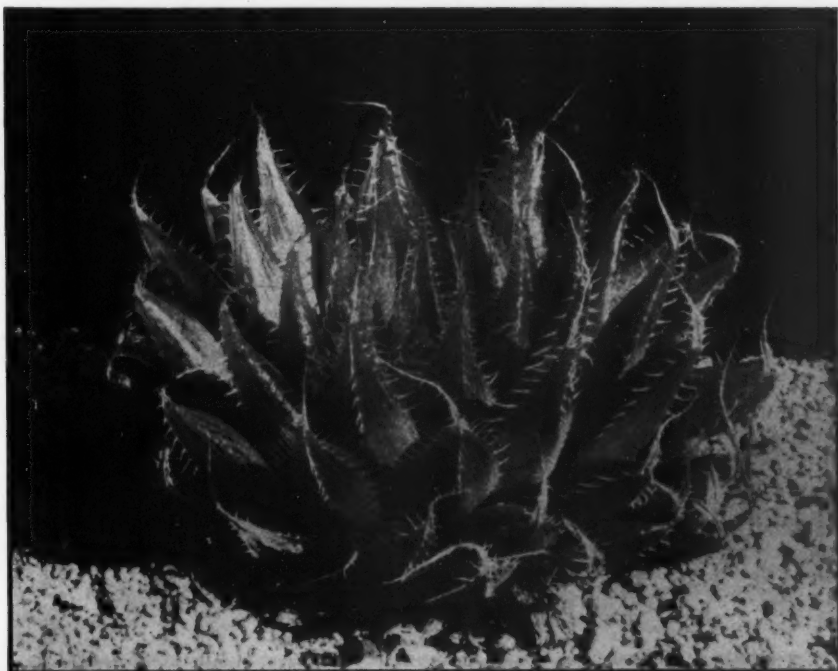
Type locality: Cape Province; Halesowen, in the Cradock Distr.

A very distinct and showy *Haworthia* by reason of its numerous, long, ciliate teeth and the glistening pellucid leaf tips. It is just about exactly twice the size of the type. Two photos are shown; the upper one of a plant growing outdoors, when the abruptly pellucid leaf tips are very conspicuous, the lower of a plant growing in a greenhouse, when the long, ciliate teeth and terminal bristles are most conspicuous.

In describing *H. Blackbeardiana* Poelln. the name, in error, was spelled *Blackbeardeana*.



FIG. 29. *Haworthia Blackbeardiana* var. *major* Poelln. in flower x 0.25



Haworthia Blackbeardiana var. *major* Poelln., nat. size; (FIG. 30 above) plant growing outdoors, (FIG. 31 below) plant growing in a greenhouse.

KEEPING UP WITH THE SPINES

G. L. Berry
and
Other Cactophiles

There is no true Cactophile who is not also a true friend

The first part of the directory of cactus collections will soon be ready for summer vacation use and I hope it helps some of us on our trips. Later additions will be sent out as fast as I get the names and descriptions of collections. Some of the States (State Garden Club Federations) have refused to cooperate, making it very difficult to obtain the list of collectors in those states, but, in time, I hope all of them will be listed and described.

Lyman Soules of Madison, Wisconsin, started his collection in a little glass-house outside a basement window a few years ago but it soon had severe growing pains and had to be enlarged. The house was built outside the basement window so heat from the basement would keep the plants warm. Now his glass-house is large enough to stand up in and it was built right over the first one simply by digging down around it and removing the glass. From his letter I wouldn't be surprised if another one would be in the making. Soon it will be like Babylon, one upon the other. His first heat was artificial gas and that almost ruined him. *Very few plants of any kind can live with artificial gas in the air.* Now he has natural gas for heat and all is well. He has about 250 plants and getting more all the time.

Carl Henschel from way up in Rupert, Idaho, who has a collection of around 800 cacti really has to work at it to keep them. He has them out-of-doors in a little glass-house in the summer but, like our friends from Canada, their winter quarters are in the basement. The cacti do very well there but succulents are hard to keep from growing. He thinks the secret of handling plants in this manner is that they must be well hardened and brought to a complete rest by gradually withholding water before they are put away for the winter. Even his seedlings "take it on the chin" like the larger plants with a minimum of winter watering. The easiest kinds to handle in this way, he thinks, is the Mammillaria group and related species, although Ferocactus and Echinopsis do very well also.

Leslie Porter of Vancouver, B. C., writes that the cactophiles up there in Canada are poorly organized and do not have much contact with each other. He has sent me a list of twenty

names to put in the directory with the hope that it might help them to get better acquainted. He keeps his plants out-of-doors in summer and in the basement in winter but is now building a glass-house so he can enjoy them all the year.

I wish all the other Canadian collectors would send me names and addresses of all they know so I could have a real Canadian section in the directory.

Mrs. C. E. McGuire of Idabel, Oklahoma, which is one part of this State that has plenty of rain has been trying to grow a lot of seedlings in her outdoor garden. But the rains ruined most of them except those from large seeds. *If seeds are planted outside, they should be covered with fine screen-wire held above the soil about four to six inches so the large raindrops will be broken into a mist before they hit the ground. Then the soil will not crust over nor will the seedlings or the seeds be washed out of the ground before they are large enough to rough it.* Mrs. McGuire recently discovered that she owned a real treasure in the form of a huge old Latin dictionary which defines almost all the descriptive names of plants.

Jim Pierce of Banning, California, writes that any cactophile could have a fine vacation in his region, near the Little San Bernardino Mountains, for the area has not been well explored and contains many interesting cacti and other plants. He has a specimen of *Opuntia Parishii* that had 147 blossoms on it last year and the time of blooming is different from that described by Jaeger. He also has found plants in that area that are supposed to be native of Arizona only.

On April 5th, while enroute to Roanoke, Va., to attend a medical meeting, I had three hours to spend in St. Louis, Mo., between planes. It turned out to be a very pleasant three hours too, for Lad Cutak met me at the airport and away we went to the Garden which I had not seen for twelve years.

Of course, we spent most of the time in the Cactus and Succulent House. Lad is doing a swell job and has the finest display collection of specimen plants that I have ever seen under glass. The only way that I think he might make it better would be for Mr. Truman or some other power to put more hours in a day so Lad would have more time for his pets. I sure had a swell visit with Lad and was really sorry when I had to leave.

If this column is to continue to express the ideas and experiences of the members for the benefit of others, more letters will have to be sent in. Everyone who grows a cactus can help someone else if they will just tell how they solved a problem.

G. L. BERRY, Lawton, Okla.



Echinocactus occultus Phil.

PLATE 24

From Blühende Kakteen—March 25, 1902

Epiphyllum truncatum Haw.

Plate 25

Epiphyllum truncatum Haw., Suppl., 85; K. Sch., Gesamtbeschr., 223.

Epiphyllum Altensteinii Pfeiff., Enum., 128.

Cactus truncatus Lk., Enum. pl. hort. Berolin. II, 24.

Cereus truncatus P. D.-C., Prodr. III, 470.

Zygocactus truncatus and *Z. Altensteinii* K. Sch., Flora Brasil. Cact., 224, 225, t. 46.

As Haworth entered more deeply into the systematics of the *Cactaceae*, he created the name *Epiphyllum* (from the Greek "epi"—on—and "phyllon" (or in Latin, "phyllum")—leaf) for all those species in the general *Cactus* and *Cereus* whose flowers were carried on the "leaves." All growers of cacti reading this Iconography know today as well as the specializing botanist that the organ carrying the flower is no leaf, but a branch whose actual leaves are situated beneath the areoles in the form of small scales. The name *Epiphyllum* is therefore misleading. All botanists, however, have long agreed to attribute no value to the meaning of generic names but to maintain them as created by their authors. If one agreed that the inferior or false names should be changed (an undertaking often attempted before now), then a continual transformation would take place; the name preferred by one could very easily arouse the displeasure of another, and so there would be changes without end.

But originally Haworth's genus *Epiphyllum* had quite a different meaning from that of today's. At the time of its creation it consisted of the only form with leaf-like branches known to Haworth, namely *Cactus phyllanthus* Linn. Later *E. truncatum* was included, then *E. Hookeri* Haw., *E. Ackermannii* Haw. and *E. speciosum* Haw., and also associated with these was a *Rhipsalis* species with leaf-like branches. From this grouping Pfeiffer later withdrew all species of *Epiphyllum* except *E. truncatum*, returning the species with large funnelliform flowers back to *Cereus* while including those with small rotate flowers with *Rhipsalis*.

Now that Link has again raised the *Cerei alati* (winged *Cerei*) group to generic status, he has rightly created for them the new name *Phyllocactus*. He was completely correct in not following the present-day opinion of many botanists who believe that Haworth's name *Epiphyllum* must be retained for the majority of the species. Before I came in close contact with growers of cacti I also advocated this viewpoint and for this reason created the name *Zygocactus*. But later on the more practical considerations came to the foreground; I have abandoned the earlier opinion, as I have perceived that the retention of *Epiphyllum* for *Phyllocactus* would give rise to inevitable confusion, and so have returned again to the older usage. At present there are a great number of very different forms and cultural varieties of this plant in gardens and collections, and these are not merely distinct in the color of the flowers but also in the form of the branches. Our illustration shows a plant which matches the type and which is distinguished by the truncate upper ends of the joints with the two spreading saw-teeth.

In the "Gesamtbeschreibung" I have expressed the opinion that *E. Rückertianum* hort. was a hybrid of *E. truncatum* Haw. and *E. Russellianum* Hook. I am forced to give up this view; for several reasons I hold this plant to be a distinct species, concerning whose homeland we are but poorly informed. I have had the opportunity to inspect many flowers and am convinced of the complete independence of the species. There is even the circumstance that the blooming period begins later than in the *E. truncatum* group although the latter sometimes has two blooming periods or one that is lengthened, according to its stock.

CLASSIFICATION—1950

Notes by W. TAYLOR MARSHALL

Zygocactus truncatus (Haw.) Schum.

Schumann erred in the above reasoning in these particulars:

1. The genus *Epiphyllum* was erected by Haworth with *Cactus phyllanthus* Linn. as the type species. Later *E. truncatum* was added. The type species cannot be removed from a genus if the genus is retained, therefore *Epiphyllum* must include *E. phyllanthus*.
2. Link erected the genus *Phyllocactus* in 1839, eight years later than Haworth's *Epiphyllum*, using the same species as his type as did Haworth. Therefore *Phyllocactus* is a synonym and must be rejected.
3. Since Schumann and most other botanists agree that *E. truncatum* Haworth is worthy of generic distinction and, on this thesis, Schumann erected the genus *Zygocactus* for this species, it follows that *E. truncatum* Haw. must be continued as the type species of *Zygocactus* by all those who consider it worthy of separate generic rank or continued in the genus *Epiphyllum* by those who deny that difference.



Epiphyllum truncatum Haw.

Plate 25

From Blühende Kakteen—July 31, 1902.

Echinopsis Pentlandii Salm-Dyck

Plate 26

*Echinopsis Pentlandii** Salm-Dyck in Allgem. Gartenz. XIV, 250; K. Sch., Gesamtbeschr., 229.
Echinocactus Pentlandii Hook. in Bot. Mag., t. 4124.

Besides the above-mentioned names there are a considerable number of others which have been set up for supposedly distinct species or forms, an eloquent testimony of the capacity for variation in these inhabitants of the western Andean regions. An extraordinary diversity is especially to be found in the color of the flowers and spines, and here we find explanation for the numerous published varieties. The plant is extremely well-characterized by means of its ribs being deeply divided into hatchet-shaped protrubences. It can be confused only with *E. cinnabarina* Lab., from which it differs in having thicker tubercles more plainly arranged into ribs and with a fewer number of diagonal furrows running between the tubercles in comparison with the diameter of the plant.

In both species can be found forms transitional toward the genus *Echinocactus*; how close they approach it is sufficiently shown by the fact that the elder Hooker placed them directly in that genus. This close relationship is mainly qualified by the flowers being situated in the vicinity of the crown and in their small size. In form, the flowers seem more to resemble those of *Echinopsis*, as they do also in having their stamens divided into two separate layers. But of particular meaning to me is that cleft ribs are to be found on a plant displaying the long funnellform flowers so very characteristic of typical *Echinopsis* species. For this reason I cannot understand how *E. Pentlandii* S.-D. could be withdrawn from the genus and placed in *Echinocactus*.

The plant illustrated is widely distributed in collections, although it has not been imported since the time I turned my attention toward cacti. We are even ignorant of its homeland. Its wide distribution is due to the copiously-produced offsets which, particularly when grafted on a good stock, develop in a short time into beautiful and richly-blooming plants. Despite our regular attempts to pollinate, even taking care to cross plants of different origins, this species does not easily set fruit. However, it is well-known that very prolific plants either bloom unwillingly or seldom form fruit when they do bloom. There is a ratio in this tendency that must be correlated.

Of the varieties which we are at present cultivating, the great majority, at least to my knowledge, are those with flowers of various shades of red. The yellow-flowering forms I have not as yet seen.

*Recently it was possible for me to make inquiries concerning Pentland; for many years he was the English ambassador in Cuzco, the old Incan city high in the Peruvian Andes. He also made an assured name for himself as a geologist, through his researches into the structure of the Andes.

CLASSIFICATION—1950

Notes by W. TAYLOR MARSHALL

Lobivia Pentlandii (Hooker) Br. & R.



FIG. 32. Drawing "Epiphyllums" by Jo. Selman in "The Begonium."

THE ORCHID CACTI

By JOHN POINDEXTER

From "California Garden" Autumn, 1949.

The Orchid Cacti, with their exotic blooms, have been originated through the hybridization of several genera of wild plants. Hence, it is not logical, strictly speaking, to give them a generic name now in use by one of the parent groups. Nevertheless, that is what was done here in America, where these plants are frequently called "Epiphyllums." The genus *Epiphyllum* is one of the groups most widely used in making the hybrid "Orchid Cacti." In Europe the name *Phyllocactus* has been applied to the parent plants.

The Orchid Cacti were developed through bigeneric hybridizations and their possible permutations between species of the following

genera: *Heliocereus*, *Nyctocereus*, *Hylocereus*, *Selenicereus* and *Nopalxochia*. With the exception of *Nyctocereus* these are all plants of the tropical forests of Central and South America, and this largely determines their treatment in the garden.

The wild species of *Epiphyllum* and of most of the other genera used in the development of the hybrids are accustomed to a temperate to warm, damp atmosphere, with a fairly heavy shading and a rich, but well-drained soil. *Hylocereus*, *Selenicereus*, *Nopalxochia* and several of the species of *Epiphyllum* are true epiphytes, and are found clinging to the trees with no roots in the ground at all. They are nourished

by deposits of pure humus lodged in the crevices of the bark of the trees on which they are growing.

With these facts in mind, it is not too difficult to determine the kind of soil mixture and other growing conditions well adapted to these plants. Most people use a soil with fifty to seventy-five per cent leaf mold or well-rotted manure, or other organic matter. The rest of the soil should be coarse decomposed granite, sand, top soil, charcoal, or the like. Every grower has success with the mixture he uses, which indicates that the plants are not too exacting in their requirements, and also that the other cultural conditions should be adapted to the soil used. The Orchid Cacti make small root systems for the size of the plants, and it is essential that they be supplied with a rich medium to supply the roots they do have. Good drainage should be added, or some of the plants are liable to rot off at the ground during the winter. Some tested soil formulas follow:

- 4 parts leaf mold
- 2 parts German peat moss
- 3 parts cow or sheep manure
- 2 parts gravel
- 2 parts sharp sand
- granulated charcoal may be added
- 1 part top soil
- 1 part leaf mold
- 1 part coarse builder's sand
- 4 parts well-rotted leaf mold
- 1 part rotted cow manure
- 1 part leaf mold
- 1 part German peat moss
- 1 part well-rotted manure
- 1 part river sand
- 1 part old crumbly loam

A variety of other formulas are available, and it is the opinion of the writer that any of them will work, provided the other care of the plants is satisfactory.

The Phyllocacti should be fertilized during the growing season, except that plants which have bloomed heavily should be rested for six weeks or so after blooming. Monthly applications of a liquid fertilizer until the buds are well set and from July through September would be quite sufficient. Ammonium phosphate is another good fertilizer. In the latter case use one teaspoon per gallon can, sprinkled away from the plant.

There is also considerable difference of opinion regarding the type of container to use for Phyllocacti. The writer prefers cans above

everything else, in spite of their appearance, because they hold the moisture in the soil better. However, some people are very successful with pots.

It is also stated that the Phyllocacti should be elevated above the ground for the best results. This does not seem to make a particle of difference, except that snails can reach the plants more easily in the earth.

Here in Southern California the climate, except for the winter minimums, is usually ideal for the Phyllocacti. To prepare the plants for the winter nights they should be gradually hardened off through the latter half of October and November. This is done by gradually cutting down on the frequency of watering and the amount of water until all of the new growth is mature and hard. From this time on the plants will require water only once a week or so unless the weather turns unseasonably warm. If the weather is wet, the plants may require even less water. It is better to lose a little growth that might have occurred during late fall, than to lose the entire plant, or a large portion of it, in an early freeze. The Phyllocacti are hardy to several degrees of frost if they are in shape for it. Some of the varieties will withstand temperatures in the low twenties.

As is the case with most plants, there are a number of pests that attack the Phyllocacti. The chief insect pests are scale, mealy bugs, and aphids. These can all be controlled through the continued use of an oil and nicotine spray, such as Super Destruxol, or the home-made mixture of Volck and Black Leaf 40. Spraying is to be avoided when the plants are in bud, so it is well to keep ants eradicated in the vicinity. This should automatically take care of most of the other pests if the plants are clean to start with. Snails cause a great deal of damage, but can be pretty well kept out with snail bait. At certain times of the year, and with certain varieties more than others, there is a tendency for the stems to become spotted. This seems to be a fungus, and its spread can be held back with the monthly use of bordeaux. The badly diseased stems should be removed, as their appearance never improves.

The chief means of propagation of the Phyllocacti is by cuttings. The seeds do not come true to variety, and they take from three to five years to make the first bloom, so that it is not very feasible for the average person to attempt to propagate them from seed. The cuttings may be any part of a stem that has a couple of areoles or "eyes," but the most popular cuttings are those that are made from an entire stem the desired size. The growth should be at least half hard, though this does not matter too much,

Before they are planted the cuttings should be laid aside in a cool dry place for a week or so, to allow the cut surface to heal over well. This helps to prevent rot while the cuttings are rooting. They may be planted in sand-peat, sand, vermiculite-sand or even directly into the growing medium. The latter is not recommended except for well-matured cuttings. The plants are very touchy as to overwatering during the rooting period, and should be carried on the dry side until the roots are functioning. Bottom heat has proved successful for the commercial growers who have used it, though it is not at all necessary.

Many people expect too much in too short a time from their Phyllocacti. Remember that one of these plants can be kept in perfect condition for a lifetime, so, if they don't bloom the first year or two, be patient with them. It may be

your fault, rather than that of the plant. The quickest way to get blooms from a propagation is to make a very large cutting. Those, fifteen to eighteen inches long, will sometimes bloom the first year after they are made. Such cuttings should be staked from the time they are first planted. The smaller cuttings sold by the commercial growers may take two years to bloom, but they often produce a thriftier plant in the end, because the branches are closer to the bottom.

Whatever method is used in starting the plant, once they have begun to produce those huge exotic flowers, the pleasure of the grower will more than compensate for the delay. There are no flowers available that can compare for size, elegance and color, with those of the "Orchid Cacti."



FIG. 33. Redwood fence with six-inch shelves makes a fine gallery for cacti.

Dear Editor:

I enjoy the Cactus Journal very much indeed and constantly enjoy your books—especially the pictures—not being a serious collector I call the plants by the wierd names that appeal to ordinary people.

I am most interested in the arrangement of plants—I have them by the dozens in pots of all sizes. When I get "low in my mind," I re-arrange the pots by color and contrasts. Dr. Dawson mentioned that they did not pay too much attention to color, but that is my reason for collecting. To see a bare and spiny plant produce such flowers makes me believe in miracles.

So many people have been inspired to collect cactus and succulents after seeing my collection, and knowing how glad collectors are to show their collections, I always go into yards and ask to see collections if there are signs of collectors about. I have met so

many people in that way and have exchanged many plants with them.

I would love to see in your magazine as a regular feature, pictures of collections. We get so many of our ideas by seeing what other people have done and a great deal of our enthusiasm and inspiration comes from the same source. I think the arrangement of gardens is as truly a part of collecting as flower arrangement is part of gardening.

Flowers have had common names always. No one uses their botanical names in ordinary conversation. The person who would give us a system of common, talkable names for cactus and succulents, would do a great service to all. Perhaps common names could be included in many articles.

MRS. GEORGE W. NILSSON
518 North Ardmore Avenue
Los Angeles 4, California



FIG. 34. *Sedum Wrightii* (left), 7595a, from near Villa García, Nuevo León, and *S. caducum*, 7370, from canyon southwest of Ciudad Victoria, Tamaulipas, both cultivated at Ithaca, N. Y.

DESCRIPTION OF A SEDUM FROM THE SIERRA MADRE ORIENTAL OF MEXICO

By ROBERT T. CLAUSEN

Department of Botany, Cornell University, Ithaca, New York.

Several species of Crassulaceae grow in the canyons west of Ciudad Victoria in the state of Tamaulipas, Mexico. Commonest are *Sedum lenophylloides* and *S. Palmeri*. Less common are *Sedum ebracteatum*, an *Echeveria*, possibly *E. Walpoleana*, and the species to be described below. The last, although local, is frequent in a canyon about 15 kilometers southwest of Ciudad Victoria and at an altitude of about 610 meters. The plants occur on ledges of limestone a few meters above the level of the streambed. On other ledges nearby, *S. lenophylloides* is common. Mr. J. L. Edwards and the writer collected the new species at this location on Feb. 13, 1949. The writer's first impression of the plants, based on the appearance of the foliage and fruits, was that they belonged to *Lenophyllum*, probably *L. guttatum*. Subsequent study of living specimens which were transplanted to a greenhouse at Ithaca, New York, has changed this notion. That others might re-

gard the vegetative specimens as *Lenophyllum*, however, is attested by the fact that Dr. C. H. Uhl obtained as cuttings from the New York Botanical Garden, no. 811/47, plants labelled *Lenophyllum Weinbergii*. These are a match for the collection from near Ciudad Victoria.

The white petals spreading from the base and not recurved, the two to three-parted cymes, and alternate leaves all distinguish the new species from *Lenophyllum*. It seems to belong to *Sedum*. The habit and foliage suggest *S. Wrightii*. The floral structure somewhat suggests *S. lenophylloides*. In several respects, the new species also resembles *S. Cockerellii*. A comparison with these three species is available in table 1. The undescribed species differs from *S. lenophylloides* in at least ten characteristics, from *S. Wrightii* in at least twelve and from *S. Cockerellii* in at least nine. Since it can not be more closely matched with any other known species, its description seems justified. Because

FIG. 35. (Right), flowers of *Sedum Wrightii* (below)
7595a and *S. caducum*, 7370.



FIG. 36. (Below), *Sedum lenophylloides*, 7579, from
near Villa Garcia, Nuevo León, cultivated
at Ithaca, N. Y.



its seeds appear well developed and no *S. Wrightii* was found where it occurs, the idea is dismissed that it might be a hybrid of *S. lenophylloides* and *S. Wrightii*. The writer's notion is that more likely the species is an offshoot of the ancestral stock from which such species as *S. Wrightii* and *S. Cockerellii* may have diverged. Although the new species is known only from within the area of distribution of *S. lenophylloides*, it is not necessarily of sympatric origin. The geographical ranges of these species may have been different in the past and they may be only distantly related. Actually, the new species may be more closely related to *S. Cockerellii*, known from mountains at the northern end of the Mexican Highland in New Mexico, than to either of the other species mentioned above. Since its characteristics more nearly are in accord with those of the section *Cockerellia* than with those of other subgenera or sections, it is tentatively assigned to that section. The specific epithet alludes to the way in which the leaves become detached at the slightest touch.

Sedum caducum, sp. nov., sectionis *Cockerellia*. Herbae perennes radicibus fibrosis, albis vel fulvis; caules papilloso, decumbentes, ramosi ex basin; folia alterna, sessilia, non calcarata, facile caduca, rhombico-ovata, obtusa, concava ventraliter, viridia dense rubro-maculata, marginibus papillo-crenatis, 7-22 mm. longa, 4-12 mm. lata, 1-3 mm. crassa; cymae terminales, 1-8 cm. in diam., floribus 2-7; bracteae florales oblongo-ellipticae, 2.8-4.4 mm. longae, 1-2 mm. latae; flores 5-partiti, 9-10 mm. in diam., in pedicellis 1.0-1.5 mm. longis, pallide viridibus; sepala oblonga, obtusa, subteretia, suberecta, pallide viridia, 3.6-4.2 mm. longa, 1-1.2 mm. lata, connata infra 1 mm.; petala 5, raro 6, lanceolata, subacuta, cucullata, erecta infra, late patentia supra, alba, 6 mm. longa, 2 mm. lata, connata infra 0.8 mm.; stamina filamentis albis et antheris pallide luteis vel pallide rubris, 2.2-5.8 mm. longa, epipetala adnata 1.6 mm. supra basibus petalorum; squamae nectariferae reniformes, lacteae, translucidae, late rotundatae, 0.4 mm. longae, 0.7 mm. latae; pistilla erecta, alba, 5.2 mm. longa, stylis 2.6 mm. longis et ovaris 2.6 mm. longis. Typus est planta culta ad Ithaca, N. Y., 1949, Nov. 9, collectio R. T. Clausen n. 7370 originaliter ab rupibus calcis in saltu 15 km. inter meridiem et occasum solis spectante ex Ciudad Victoria, Tamaulipas, Mexico, alt. 610 m., 23° 38' Bor. 99° 12' Occ., 1949, Feb. 13.

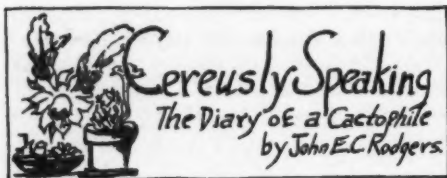
For financial aid for the work in the field, the writer gratefully acknowledges grants from the Penrose Fund of the American Philosophical Society and the Mary S. Andrews Research Fund of the Torrey Botanical Club.



FIG. 4. *Sedum Cockerellii* from Sandia Mts., New Mexico, cultivated in greenhouse, Ithaca, N. Y.

TABLE I

	<i>Sedum lenophylloides</i>	Sedum from south-west of Ciudad Victoria	<i>Sedum Wrightii</i>	<i>Sedum Cockerellii</i>
habit	subshrub	herb	herb	herb
stems	papillose	papillose	glabrous	papillose or glabrous
leaves:				
orientation	at right angles to stems or even reflexed, not imbricate	divergent, at an angle of 45° from stems, closely crowded	divergent, at angles from 50-60° from stems, somewhat crowded	divergent, at an angle of about 45° from stems, somewhat crowded
shape	narrowly elliptical or elliptic-oblong	rhomboid-obovate	elliptical, oblong-ovate, ovate or globular	oblong-oblanceolate, narrowly spatulate or oblong-lanceolate
ventral surface	concave, plane or subconvex	channeled	convex	slightly concave
color	green or purplish green	green prominently speckled with red and thus appearing reddish	yellow-green	light green, glaucous
length	5-26 mm.	7-22 mm.	2-9 mm.	5-18 mm.
width	2-9 mm.	4-14 mm.	1-5 mm.	2-6 mm.
ratio of length to width	two to five times longer than wide	less than twice as long as wide	twice or less than twice as long as wide	two to three times longer than wide
cymes:				
kind	paniculate	two to three-parted	two to five-parted	three-parted
number of flowers	12-54	2-7	20-33	5-11
sepals:				
shape	lanceolate-elliptical or oblong-lanceolate	oblong	ovate-elliptical or oblong-elliptical	linear-oblong
length	2.4-3.4 mm.	3.6-4.2 mm.	4-6 mm.	4-5 mm.
petals:				
orientation	briefly erect at base, then widely spreading	briefly erect at base, then widely spreading	erect to above middle, then spreading	briefly erect at base, then widely spreading
shape	lanceolate	lanceolate	spatulate-oblong or oblong	lanceolate
apex	acute and mucronate	subacute, hooded	abruptly acute and mucronate	acute
length	5.6-7.2 mm.	6.4 mm.	5-6.6 mm.	6-9 mm.
amount of fusion	0.4 mm.	0.8 mm.	0	0
stamens:				
length	2-5.4 mm.	2.2-5.8 mm.	4-6.5 mm.	4-7 mm.
color of anthers	buff	pale yellow to pale carmine	deep pink to dark red	pink, purple or red
nectaries:				
color	dark carmine to orange	creamy white	bright yellow	yellowish white
shape	subquadrate	reniform	reniform	reniform
length	0.6-0.8 mm.	0.4 mm.	0.3-0.4 mm.	0.4-0.5 mm.
width	0.6-0.8 mm.	0.7 mm.	0.1-0.7 mm.	0.6 mm.
pistils:				
length	4.4-5.8 mm.	5.2 mm.	5.4-6 mm.	4.4-8 mm.
seeds	papillose	not papillose	papillose	not papillose



When I first thought about writing about *Lithops* I wondered if I was enough of an observer of others' methods to write about them. I have two species of the genus which I have had for several years. Now that you know this I hope you will read my further comments. *Lithops* are mimicry plants which have adjusted themselves to their rocky surroundings, climatic vagaries, and mode of growth so well that, defenseless as they are, they have survived voracious animals and have multiplied.

Lithops belong to the Aizoaceae, the botanical family that includes the Mesembryanthema (noon flowers). The term, with few exceptions, refers to leaf succulents. *Lithops* appear to be thickened stems but in reality they are "leaf succulents" with true leaves. The plants resemble highly polished pebbles ("lithos" means stone and "ops" means face in Greek) with a groove or split at right angles to the longer axis of the plant body. The tops of the lobes are translucent (windowed) to allow the top of the plant, surrounded as it is by sand and pebbles, to get all the light possible into the interior or growing center of the plant. The transverse, grooved lobes are pushed apart by the growth of the new pairs of leaves. The older leaves gradually dry back and form a protective covering about the soft fleshy base of the plant. Once in a while these do not dry back and the plant has four leaves at once. *Lithops* are never more than two inches tall even when fully grown.

The coloring of each species closely resemble their surroundings, whether it be red, gray, buff, or brown pebbles or sand. Harry Johnson lists them in many shades as well as mottled, lined, checked, etc. His catalog lists about 30 *Lithops* (seedlings and full grown). He also sells mixed seed of these "Stone Faces" with growing directions. Several local collectors have raised plants from seed with good success but I've never tried it myself.

The local names are not flattering or unique. Stone Faces, Living Rocks, as well as descriptives such as Granite Faces, Red Stones, Sparrow Food. One old lady, when she first saw several kinds, said, "They don't look human," which must account for us collectors being so interested in them.

My two—(*Lithops turbiniformis* and *L. Lesliei*) bloom usually in October and November. The blooms, which grow larger for the first day or two after opening, are the same general pattern as the other Mesembryanthema. They open and close when the sun is shining but usually remain closed or partly closed on dark days.

The diseases are due to poorly drained soils, too little nourishment, and too much attention. I have had both of my species for eight years or more and they have never had any diseases that I have noted. Mealy bugs try to push down through the groove to the soft tissues below but there is little danger other than when new growth begins in the early spring. It is well to inspect the dried outer leaves about the base as the tissue is most vulnerable there. Rot always tends to work upward while the outside may look perfectly healthy. This is caused by poorly drained soil and the closing up of the air entrances

between the granules of clayey soils, moss growth, etc.

I have never acquired any by purchase partly because of space and partly because of the losses others have had. Dr. Henry Shetrone of Columbus, Ohio, gave me *L. Lesliei* and Dr. Otto Laporte, of Ann Arbor, Michigan, was the donor of *L. turbiniformis*—both claim they are easily grown. Dr. James Machwart of Parma, Ohio, had 12 species in a box of porous soil without any pebbles around them placed near an open window in the greenhouse. He found sparrows pecked at them. Whether they liked the taste or were intrigued by the shiny surfaces, he was not able to find out. They marred the appearance of the plant until the new growth.

Mrs. Charles Amato, Lorain, Ohio, bought a Johnson collection. She kept them in a "no-growth" state one winter but lost most of them during the spring. She double-potted them with washed sand in both containers. Too little water, too little nourishment, and the gray Lake Erie weather with Venetian Blinds at the south window finished all but one. The successful growers give them richer sandy soil, double drainage, plenty of light, and limited watering and it works.

Lithops come from Great Namaqualand, Transvaal, and the Karroo. There they take on the color of the surrounding pebbles and are most difficult to find unless they are in flower. Luckily for the plants, when they are in flower there is also enough green plants to supply the would be enemies.

I use a well decayed leaf mold mixture with peatized gravel and coarse sand, a liberal dash of pulverized limestone and clayey loam and steam the whole while damp for two to four hours. This soil is rich enough to encourage firm, well colored growth, neutral enough to satisfy the lime requirements, and coarse enough to drain rapidly. My *Lithops* grow, flower, and increase from the roots.

Lithops are all window size plants whether planted in groups or as single pot specimens. They like plenty of light, especially in the winter. I kept mine away from cold drafts at all times on my greenhouse bench. The temperature remains about 50° (night). All of the flowers are attractive and are larger than the diameter of the plants. Some are 1½ to 2 inches across. The color range that I find mentioned is limited to white, canary yellow, orange-yellow, and yellow.

My plant of the month is *Lithops turbiniformis*. It is one of the largest of the genus and is a vigorous grower. Dr. Laporte gave me three seedlings in 1942. I potted them in a 3-inch pot with good soil, two inches of drainage and light on all sides. There are now five heads. The yellow flowers appear in October and November and are not self-fertile as far as I can determine; only one flower opens at a time. The base near the ground is very light green which shades into an iridescent purplish pink to terra cotta opalescence on top. When growth commences, a slight opening develops through which the dark chocolate-red of the new growth can be seen. It takes at least two or three months for the new growth to take over the food making of the withering older leaves but they do it. *Lithops* are desirable; try some.

FROM MICHIGAN

I have about fifty varieties of cacti and succulents including Orchid Cacti, Crown of Thorns (in quantity; this is seldom listed in any catalogue), hardy northern cacti, etc. I've found it best never or practically never, to water cacti but use the water spray daily. Because few people realize this, they give up cacti.

DR. V. V. JHELPHY, Wayne, Michigan.



QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: Many of my *Echinopsis* flower but very few set seeds. Can you tell me why. Dan Neumann, Oakland, Calif.

Answer: *Echinopsis* are not self-fertile but require cross-pollination. To set seed you must use the pollen of another seedling. This brings up some interesting facts. For instance all *Echinopsis multiplex* in gardens throughout the world are a single clone. Apparently one plant was selected in the wilds and sent to Europe. No other wild plant of this species has been introduced. I recently raised true, unhybridized seedlings and have flowered many of them. None of course are exactly like the mother plant but are sufficiently similar to fall within the normal, to be expected range of the species. None are as good as the parent which leads me to believe that the wild species collected was probably a selected plant possibly even of a better known species and perhaps does not deserve specific rank. The plants were raised from seed set parthenogenetically. The ovules were stimulated into growth by foreign pollen, in this case *Lobivia* pollen. The F2 generation shows no further variation. In the wilds insects cross-pollinate the blossoms. The plants have a curious adaptation to insure the setting of seed. You may be assured that on the day your plant is in bloom that others of the same species will be in bloom also. Just what triggers the concatenation of growth processes I would not know but surmise it must be some stable, universal natural phenomenon such as the length of day. I don't think temperature, intensity of light, moisture, etc., would be stable enough over even a limited area to act as an impellent. I have seen orchids act the same way. While living in Guatemala I observed *Sobralia macrantha*, whose flowers are ephemeral, in flower over miles of trail and next day you could not find a one.

Question: Since most of our *Epiphyllum* hybrids originated from the same parent stock, isn't there a likelihood of the cuttings of cuttings, etc., producing weak plants with fewer flowers. I should think that the same would apply to the newer, haphazard hybrids which are hybrids from other hybrids with seldom any new blood from the original species. W. Hoyt, Portland, Oregon.

Answer: Continuous propagation of a variety

by cuttings would have no effect on its genetic constitution. It might have a purely local effect if stocks were allowed to deteriorate. Weak cuttings would make weak plants under improper conditions. However, good cutting properly grown would always have exactly the same potentialities as the original parent. Hybrids raised from their seed are a different matter. Seedlings would vary considerably as several genera and species were used in the original crosses. Their constitution would vary from weak to probably stronger than either parent. As hybridizers work with plants they learn by rule of thumb the genetic characteristics of certain hybrids. They learn that one variety transmits color, or flower type, vigor, freedom of bloom, etc. Thus they can work intelligently toward a given objective. The moment you go back to the original species you pose a twenty year setback until you relearn the potentialities. No hybridizer does this unless he is definitely trying to bring in a new character or recombination of characters. Sometimes very desirable characters such as floriferousness or color are linked with weak stems or susceptibility to disease. Oftentimes the hybridizer runs into a blind alley when this occurs. The trained geneticist can often figure out a series of crosses to come up with the correct answer.

Question: What causes plants to scab? Mrs. W. A. Burkheart, Kellogg, Idaho.

Answer: I presume you mean the unsightly patches on some plants. I do not know whether this is always a fungus or whether in some cases it is physiological. At any rate it is almost always due to errors in culture. Too much moisture in the air sometimes induces it. Certain of the *Cerei* and some of the *Opuntias* are very subject to it. Generally plenty of sunshine is a help. However such plants as *Trichocereus Spachianus* will develop it in spite of precautions. Where these plants are grown in dry climates away from coastal climatic influences they are free from it. After the damage is done it is permanent. Some of the climbing *Selenicereus*, *Hylocereus* and *Acanthocereus* very evidently show ravages by fungus or bacteria. It seems to be deeper seated than epidermal. I know of no spray to counteract it. Perhaps continual spraying with Bordeaux Mixture or Natriphene may stop it. Generally good culture keeps it well under control.

Question: I discovered some very tiny white thread-like worms in the soil. These worms ate the roots. Mrs. L. E. Davis, Rhode Island.

Answer: I often receive letters describing insects which are thought to be attacking cacti or succulents. However, in most cases they turn out

to be harmless local insects that were brought in with the soil or which perhaps were active at the time the plants were observed. If the description sounded interesting I have had the plants shipped to me but in no case have I found any injurious insects. Sometimes coffee grounds or whey are used as fertilizers or the soil is sour from over watering or poor drainage and various insects may find these conditions to their liking. However, they are not after the cacti. The troublesome insects are scale, mealy bug, thrips and red spider. There are others but these are the chief offenders. Oil sprays such as Volck will take care of all of them. Rotenone or Pyrethrum sprays are excel-

lent but not too effective against scale or mealy bug which have waxy coverings. Oil sprays should not be used oftener than 2 or 3 times a year as they clog the breathing pores (stoma) and may check growth. A combination of Volck and Rotenone or Pyrethrum is most effective and will quickly bring an end to infestations. Plants with white bloom such as *Lemai-reocereus pruinosus* will turn green if oil sprays are used. Oil sprays are also dangerous to use on Stapeliads which may linger and die. Succulents in general don't like oil sprays but if infestations are to be controlled it often has to be used.



FIG. 37. Habitat of *Ferocactus Wislizenii* near Tucson, Arizona. These Barrel Cacti were about two feet high with orange-red flowers. For close-up of plant see this Journal XXII, pg. 33.

ARIZONA CACTI

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TEXAS CACTI AGAIN AVAILABLE

We have obtained a good supply of this 1930 edition of "Texas Cacti" by Schulz and Runyon. When this supply is gone it will again become a rare book item. The 180 page book contains 63 photos of the cacti native to Texas with understandable descriptions. There are chapters on culture, distribution, and ene-

mies, as well as a glossary and list of common names. Well indexed. Paper covers \$3.75 postpaid.

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ABBEE GARDEN PRESS

SCHWANTES' "SYSTEM OF THE MESEMBRYANTHEMACEAE"

Supplementary comments by G. D. ROWLEY, Feb. 17th, 1950

I note with great interest the appearance, in the January JOURNAL, of the long-promised "System of the Mesembryanthemaceae" by Dr. Schwantes, an excellent translation by Mr. D. Neumann.

In briefly reviewing this system in 1948,* I pointed out some errors in the original, both typographical and taxonomic. Shortly afterwards, I was pleased to hear from Dr. Schwantes, who corrected certain mistakes in my own article and enclosed a fully corrected copy

of his original paper from *Sukkulantenkunde I* (1947) to assist in a translation I was then preparing myself.

I list below all the alterations of which Dr. Schwantes has notified me, together with page references to Mr. Neumann's translation so that the reader can make the necessary adjustments. There follows a list of a few additional remarks of my own: either points overlooked by the author or arising from the translation as it appears in the JOURNAL.

LIST I Amendments by Dr. G. Schwantes (to original German version).
American C. & S. J. XXII

PAGE LINE

- 20 13 Mesembryanthemaceae Herre et Volk is acknowledged to have no standing. See note below.
17 Add: "without seed-pockets."
24 Add at beginning of line: "Stemless."
27 For: "Byla" read: "Bijlia."
29 For: "Hereroa Schwant." read: "Hereroa Dtr. et Schwant."
33 For: "Leipoldtia N. E. Br." read: "Leipoldtia L. Bol."
37 Delete: "Perissolobus N. E. Br."
38 Delete: "Marlothistella Schwant."
41 For: "many-celled" read: "5-celled."
42 Add at beginning of line: "in part."
45 For: "Astridia Schwant." read: "Astridia Dtr. et Schwant."
51 Delete: "Peersia L. Bol."
21 2 Delete exclamation mark.
4 Add: "Arenifera Herre."
10 Add to list of genera: "Smicrostigma N. E. Br."
15 For: "Kaadia" read "Khadia."
18 For: "cellular" read: "many-celled."
24 For: "Chasmatophyllum Schwant." read: "Chasmatophyllum Dtr. et Schwant."
33 For: "Dracophylinae" read: "Dracophilinae."
34 For: "2-25 stigmas." read: "5-25 stigmas."
36 For: "Dracophilus Schwant." read: "Dracophilus Dtr. et Schwant."
21 38 For: "Namibia Schwant." read: "Namibia Dtr. et Schwant."
42 Alter: "Capsules as with Delosperma." to: "Capsules, besides Lapidaria with cell-wings, as in Delosperma."
45 For: "Frithinae" read: "Frithiinae."
22 3 For: "Gibbaeum N. E. Br." read "Gibbaeum Haw."
33 Follow on with:
Subtribe 23 *Saphesiinae*
Saphesia N. E. Br.
45-6 Alter opening sentence to read:
"Biennial or perennial subshrubs."
48 For: "seed pockets" read: "cells."
50 For: "Skiatophytum N. E. Br." read:
"Skiatophytum L. Bol."
23 7 For: "CARPOBROTHEAE" read: "CARPOBROTEAE."
11 For: "Aridaria" read: "Aptenia."
45 Delete: "Circandra N. E. Br."
46 Delete: "Smicrostigma N. E. Br."
49 Delete: "Maughania N. E. Br."

*See "Schwantes' Mesembryanthemaceae" in National Cac. & Suc. J. III:67-8, Sept. 1948.

LIST II Amendments by G. D. Rowley (to English translation).

PAGE LINE

- 20 13 The choice of a family name for this group is a very vexed question, and one to which I have given much time and attention. This is no place to present the full case for the various competitors (Ficoidaceae, Mesembryaceae, Mesembryanthemaceae, Aizoaceae, etc.), which I hope to do shortly in an article in the Nat. Cac. & Suc. J. of Gt. Britain. I can see no objection to retaining the oldest name, Jussieu's *Ficoideae* of 1789, in amended form as *Ficoidaceae* (Juss.) G. Rowley (= *Mesembryanthemum* L.; *Mesembryanthemaceae* Endlicher (1839); *Mesembrianthemaceae* Lowe (1868), etc.) for the single Linnaean genus *Mesembryanthemum* erected to a family by itself. The only objection to this would be that of certain purists who insist on taking, for purposes of priority, the first published name ending in -aceae. For them, the *Mesembryaceae* of Lindley (1836, emend.) would be the correct choice.
- 20 The "compartment covers" referred to throughout are the "cell wings" of N. E. Brown.
- 21 7 Add a comma after: "calyx."
- 26 For: "Henricia L. Bol." read: "Neohenricia L. Bol." *Henricia* L. Bol. is a later homonym of *Henricia* Cass.—See L. Bolus in J. S. Afr. Bot., April 1938.
- 22 7 For: "Opthalmophyllum" read "Ophthalmophyllum."
- 23 *After: "stemless." add: "Markedly heterophyllous."
- 40 *After: "swelling" add: "with the aid of expanding keels."
- 49 For: "mericarp" read: "schizocarp."
- 23 41 *Add after the diagnosis:
"Aspazoma N. E. Br. Dactylopsis N. E. Br."
- 49 In 1948 Dr. Herre wrote to me claiming that *Maughania insignis* N. E. Br. was nothing but a plant of *Monilaria luckhoffii* L. Bol. rooted in the dead skin of a *Sarcocaulon* or other tuberous succulent. Having not seen the type specimen, if such exists, I can offer no comment yet on this assertion.

*Omissions of the translator.

ANNOUNCING THE NEW ALOE BOOK

"The Aloes of South Africa," a 650-page monograph, by G. W. Reynolds, is now on the press. Part I includes the historical sketch, discussion of the early collectors and their travels, bibliographical notes, Aloe taxonomy and nomenclature simplified for the amateur, maps, etc. Part II comprises the classification of the 132 South African species of Aloe. Under each species is given the species name and author, synonymy, pre-Linnaean citations, full description based on plants in their natural habitats, herbarium material, type locality where known, distribution and variation, native names and legends, medicinal uses, notes on nearest allies and distinguishing characters, together with notes of horticultural and general interest. Natural hybrids are listed and illustrated, while apparent dominant and recessive characters are suggested. A Glossary of Botanical Terms is included, together with an Index.

Every species is illustrated in black and white, almost all of them as *the plant grows wild*; individual flowers from bud to post-pollination stage are all reproduced natural size. There are 572 such figures. IN ADDITION, THERE WILL BE 75 COLOUR PLATES.

Mr. Reynolds has travelled over 100,000 miles throughout South Africa during the last 18 years collecting data. In order that the colour plates should reach the highest standards possible, he imported and used a special "One Shot" 3-colour separation camera balanced for daylight, in order to make the necessary separation negatives in the field as *the plants grow wild in their natural habitats*. We believe that this is the first time this modern technique has been employed in the production of colour plates for a botanical monograph.

Keys to the sections, series and species, are given in simple form, while *the text is in simple language throughout*, so that—while invaluable to the botanist—the student, amateur, and plant lover should have little or no difficulty in recognizing his Aloe in the veld, or in cultivation.

Up to the end of August we are accepting donations and subscriptions for a special de luxe edition. This edition will be limited to 500 copies specially bound, numbered, named and signed by the author—price \$35.00. This special edition will be followed by the standard edition which will be announced in the September JOURNAL. Deliveries are expected to be made by the end of the year.

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Pasadena, California

FROM CANADA

We live on a small farm about six miles out of the small town of Empress. We are both over 60 with very few neighbors, and in just about the driest part of Canada. I have a collection of about 100 cacti and succulents enlarged by exchanging our native plants of *Mammillaria vivipara* and *Opuntia polyacantha*; these two kinds grow by the thousands close around us.

MRS. A. J. CHAPMAN

Box 35, Empress, Alta., Canada.

FROM OREGON

Mrs. E. J. Martin of Cottage Grove, Oregon, sends in a clipping from Roseburg Oregon News-Review. A single publicity article of this kind stimulates interest and the number of Society members in Oregon has increased considerably. Members have fallen off in Kansas, but have increased in the southern states of Louisiana and Florida.

PACHYCEREUS ORCUTTII

Mr. Charles F. Harbison, Curator of Entomology, San Diego Museum of Natural History, reported in its Bulletin issued on May 1st that Senora Anita G. Espinosa of El Rosario, Baja California, has rediscovered *Pachycereus Orcuttii*. The July Journal will contain a full account illustrated with a series of photographs taken in the field and in the laboratory.



SPINE CHATS

LADISLAV CUTAK



April is a good month for the Hedgehog Cacti. It is then that the Echinocerei garland their stems with colorful blooms. *Echinocereus papillosus* is a Texas beauty which exhibits its pale lemon flowers in early April. Our friend, Dr. Elzada U. Clover, once stated that this species was very abundant in the vicinity of Edinburg, in Hidalgo County. The plants grow in a soil which is a light sandy loam with some red gravel and limestone on low hills. They prefer the shelter of shrubs and large *Opuntias*.

There seem to be two forms of *Echinocereus papillosus*—one a much lighter colored specimen in comparison to the other. The lighter-spined form appears to have fewer radial spines. Both types are more or less cespitose with ascending stems, up to 6½ inches tall and 2 inches in diameter. There are 7 to 9 prominent ribs, strongly tubercled. Each areole produces 7 or 8 acicular radial spines of a white to a dirty yellow color and a solitary, porrect central which is longer and stouter than the radials. A thin, dark, wavy stripe appears between the ribs which almost disappears on older stems. This dark stripe is less prominent in the darker-colored specimens.

The blossoms of *Echinocereus papillosus* are quite large, being 3 inches broad when fully expanded. The oblong-spatulate acuminate, somewhat serrate, perianth segments number around 30 and are of a pale lemon color with a reddish center. In addition a broad tapering purplish stripe extends through the center of each sepal. Minute dark green scales appear on the ovary with 6 or 7 white bristles. The white style is about twice as long as the stamens and bears 9 to 12 light green stigma-lobes at the apex. The flowers possess slight fragrance.

At the junction of six roads on the Pretoria-Johannesburg road in South Africa there is an egg-shaped island facing the Voortrekker Monument. Upon this island the Pretoria Parks Department laid out a floral design representing a giant "voortrekker" wagon wheel measuring 240 feet in diameter and 754 feet in circumference. A native cycad forms the hub of the wheel within a circle of grass from which to the outside rim, stretch the fourteen spokes, each 96 feet in length, composed of thousands of living Aloes. The Aloes are the gift of farmers in the Mooiplaats and the Hennops River area and are of three species: *Aloe Marlothii*, *A. transvalensis* and *A. Davyana*. Four thousand of *Aloe transvalensis*, tapering in height from five feet at the knave to one foot at the rim, form the spokes. The size of the knave is forty feet, at which point the spokes are nine feet apart while at the rim they are fifty-four feet apart. The rim is formed of a 20-ft. strip of Kikuyu grass, bordered with a double line of *Aloe Davyana*. On the north side of the wheel three thousand *Aloe transvalensis* are used to form the word "WELKOM." This wheel design was made for the Voortrekker Monument celebrations begun last December and will remain permanently in the island. It is felt that this project will draw many visitors to the cross-roads, especially in late winter when 9,000 Aloes will bloom.

A Science Expedition to the Pescadore Islands in

1948 enabled Tang-Shui Liu, chief Biology curator of the Taiwan Museum to make a detailed survey of the plant formations found there. The Pescadores are a group of 64 islands lying in the Formosan Strait off South-eastern China. The topography of these islands is that of rolling plains as the elevation never exceeds 250 feet above sea level. The greater part of the land is under cultivation and the rest is nearly barren. The statistics show that 179 species are found in the islands, including a certain number of introduced plants. Among the succulents the following are either found in open waste places, or on sandy beaches: *Sesuvium Portulacastrum*, *Tetragonia expansa*, *Portulaca oleracea*, *P. pilosa*, and *Euphorbia Tirucalli*. Among the cultivated succulents are *Hyloteris tricoloratus*, *Opuntia Ficus-indica*, *Euphorbia nerifolia*, *Aloe vera* var. *chinensis*, *Agave americana*, *A. sisalana* and *Senecio cylindrica*. This information is gleaned from "The Vegetation and Flora of the Pescadore Islands" published in the Quarterly Journal of the Taiwan Museum, December, 1949.

Ethel Bailey Higgins is the author of an "Annotated Distributional List of the Ferns and Flowering Plants of San Diego County, California" issued as Occasional Papers No. 8 of the San Diego Society of Natural History. This list includes those plants indigenous to San Diego County and those alien plants which have become naturalized, or which have escaped from cultivation and have become established. Nearly 1800 species and varieties are included. Two yuccas, three nolinias, two agaves, four mesembis, three sedums, eight echeverias (dudleya, stylophyllum, etc.) one ocotillo, fifteen opuntias, three cerei (including *Echinocereus* and *Bergerocactus*), two echinocacti (*Ferocactus*) and two mammillarias are recorded.

Early last month, in April, Dr. G. L. Berry of Lawton, Oklahoma, prominent member of the Society, stopped off in St. Louis between planes, giving me an opportunity to renew acquaintance and show him our Garden. Dr. Berry is the man who is attempting to compile a directory of cactus collections, so that members will have access to them when business, vacation or chance finds them in a cactophile's town. The whole project is worthy and noble. I hope all of you have answered the questionnaire which was sent out last year, but if you have not you can still do it.

Dr. Berry started his hobby around 1929 when someone gave him a few cactus plants. Five years later he improvised a porch to house his collection and then decided on a greenhouse. This present 11 x 20-ft. glasshouse is now filled with exotic and colorful succulents of all sizes and shapes. Mrs. Berry shares a part of the greenhouse and grows house plants other than succulents.

How about letting me see some of those pictures you took at past conventions? A reminiscence hour is scheduled for the Denver meeting and I'm preparing both color and black and white slides for the occasion. Will you oblige? Send prints, slides or negatives for duplication to me, please!

RECOMMENDED BOOKS

If an amateur will master the contents of these small books he will have a general understanding of most of the plants in cultivation and will be able to derive valuable information from even scientific articles. To enjoy ones hobby one must make an earnest effort to learn all one can about the subject.

CACTI FOR THE AMATEUR by Scott E. Haselton

Among the chapter headings are: Who collects cacti and why; Building a collection; Cataloguing and labeling; General culture; Potting; Growing cacti indoors; Cultivation outdoors; Control of insects; Propagation; Cactus family. Tells the beginner what cacti he can grow and furnishes complete illustrated cultural information. This book has outsold any other cactus book ever published. *Contains:* 142 pages 6½x9¼ in., 160 fine illustrations and a color-plate of 110 named cacti. Cloth \$3.00; postage 15c, foreign 20c.

SUCCULENTS FOR THE AMATEUR by J. R. Brown

Written for the beginner, this book introduces one to more than 800 of the best succulents. Clear illustrations show 400 named kinds which include those usually found in amateur collections. *Contains:* 172 pages 6½x9¼ in., 264 clear photographs, and a color-plate of 78 of the most colorful succulents. Cloth bound \$3.00; postage 15c, foreign 20c.

PRONOUNCING GLOSSARY by Marshall & Woods

Collectors and beginners have demanded information so that they may be able to pronounce these "terrible" cactus names. 120 valuable pages. Cloth bound \$3.15. This Glossary includes all terms used in the description of cacti with hundreds of suitable illustrations.

Please add 3% Sales Tax in California

SCOTT HASELTON
BOX 101, PASADENA, CALIF.

CACTUS AND SUCCULENT JOURNAL:

It has been a great pleasure to re-read your JOURNAL from Vol. I through Vol. XVIII and living over the days when I first joined your Society.

My collection has been through three stages: 1. All stolen. 2. A new collection of 700 plants smashed by a buzz bomb. Greenhouse, plants, and all my home just a heap of brick and wood—not a vestige was recovered. 3. Next, a rented house and a new collection plus cage birds which met the fate of a shell landing in the garden which demolished the greenhouse and released the birds; however, I managed to get a few bits of plants to grow and these are now my only connection, but although I am 68 I am on the hunt for a few more (in time for the H bomb).

I have had well over 1800 species of cacti and about 800 species of succulents, so this re-reading of the JOURNALS has been very enjoyable. Your methods and climate are not ours. Every and all plants with the exception of Epiphyllums and very few succulents have been grown on just pieces of burnt clay from a mineralized source. They were always healthy and of very beautiful spine and foliage colour. They have been a great help to me through the two wars and an ever ready assuages of jitters. I have always been a passable gardener and have much to thank my garden and plants for.

DR. CHAS. LLOYD, Surrey, England.

The Committee for assembly of a Botanical card file is in need of volunteer typists to assist in this work. If you are willing to help and have some spare time, contact me by writing to: George G. Glade, 7600 Verdugo Crestline Dr., Tujunga, Calif.

Neale's Photographic Plates

With the new foreign rate of exchange, you may subscribe to "Neale's Photographic Plates" for \$4.75 per year (9.50 for 1949 and 1950). You receive at least 48 plates each year with many added features for 1950. If you are collecting pictures of cacti and succulents, you should have this fine series. Every subscription from the USA means that some collector in England will be able to subscribe to our Journal—so you render a double service by taking advantage of this new low rate. Mail your order to Cactus Journal, Box 101, Pasadena, Calif.

Study of Cacti—Higgins. Postpaid \$3.25. Cactus names and classification explained. Distribution, uses and cultivation. Description of the main groups with an outline for a quick understanding of their relationship. Culture is dependent on a knowledge of the habitat of the plants.

THE NATIONAL CACTUS AND SUCCULENT JOURNAL

This quarterly magazine is a must for every student and cactus grower. There are cultural articles and helpful information for beginners. Well printed with clear illustrations. The JOURNAL and Newsletters now available for 1950 at \$2.95 per year. Mail to Box 101, Pasadena.

NEW CATALOGUE

Cactus Pete, 5440 Valley Boulevard, Los Angeles, California, has just completed his Catalogue No. 3, price 25c. This 48-page book contains valuable information about Epiphyllum hybrids or the "Orchid Cacti." Although the listing is chiefly on Epiphyllums, other related plants are available such as Rhipsalis, Pseudorhipsalis, Disocactus, Chiapasias, Nopalxochia, Lepismium, Heliocereus, and Hylocereus. The catalogue is well illustrated with some color plates. Send for your copy now.

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The Cactus and Succulent Society of America and Abbey Garden Press have appointed Mr. E. Lamb to take subscriptions to the JOURNAL and to supply books to our friends in England. Address W. T. Neale and Co., Franklin Road, Worthing, Sussex, England.

